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PHILADELPHIA, PA 19103			ART UNIT	PAPER NUMBER
			1762	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)
	10/600,809	HONG ET AL.
	Examiner Elena Tsoy	Art Unit 1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 20 June 2007.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 4,5,7-14 and 19-50 is/are pending in the application.
 4a) Of the above claim(s) 19-38 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 4,5,7-14 and 39-50 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____

Response to Amendment

Amendment filed on June 20, 2007 has been entered. Claims 4, 5, 7-14, and 19-50 are pending in the application. Claims 19-38 are withdrawn from consideration as directed to a non-elected invention.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Rejection of claims 40, 9-12, and 44-45 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement has been withdrawn due to amendment.
3. Rejection of claims 40, 9-12, and 44-45 under 35 U.S.C. 112, first paragraph, as failing to comply with the scope of enablement requirement has been withdrawn due to amendment.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4-5, 7-8, 13, 14, and 39-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al, further in view of Balcar et al (US 5022897) for the reasons of record set forth in paragraph 7 of the Office Action mailed on 12/04/2006.

Art Unit: 1762

8. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al, further in view of Balcar et al, and further in view of Ryan et al (US 6306795) for the reasons of record set forth in paragraph 8 of the Office Action mailed on 12/04/2006.

9. Claims 46-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al, further in view of Ryan et al Balcar et al, and further in view of Iwata et al (US 4735975) for the reasons of record set forth in paragraph 9 of the Office Action mailed on 12/04/2006. The Examiner agrees with Applicants that an inadvertent typographical error has occurred: Balcar et al should have been cited instead of Ryan et al since claims 46-50 depend on claims 39 and 44 which were rejected over Joedicke/Skadulis/McMahon, Ine et al in combination with Balcar et al not with Ryan et al.

Response to Arguments

10. Applicants' arguments filed June 20, 2007 have been fully considered but they are not persuasive.

Claims 4-5, 7-8, 13, 14, 39, and 40-45 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al., further in view of U.S. Patent 5,022,897 ("Balcar et al.").

Applicants argue that one of ordinary skill in the art would not combine Joedicke/Skadulis/McMahon with Ine et al. as suggested by the Examiner, because the disclosures relate to different arts and have different purposes. Ine et al. relates to preparing a "hydraulic compound subgrade material" (I) [003]) a construction material used in road construction. There is nothing in Ine et al. that would motivate one of ordinary skill in the art to

use the lime-stabilized "crushed stone impalpable powder" as a base particle for roofing granules.

The Examiner respectfully disagrees with this argument. Each of primary references Joedicke, Skadulis and McMahon teaches that the base particles are obtained by crushing and screening mineral aggregates (i.e. producing claimed stone dust as by-product) (See Joedicke, column 2, lines 46-47; Skadulis, column 1, lines 61-62; McMahon, column 3, lines 3-4). Ine et al is a secondary reference which was applied to show that a stone fine powder after crushing and screening can be recycled to produce granules of desired grain size by mixing the stone powder with a lime stabilizer (a binder) and granulating the mixture by compaction and agglomeration (See P 8, 12-18 of the machine translation) (See Abstract). Therefore, Ine et al would motivate one of ordinary skill in the art to recycle a waste by-product. However, it should be noted that even without teaching of Ine et al, the mere production of the dust by-product in Joedicke/Skadulis/McMahon would motivate one of ordinary skill in the art to seek methods of recycling the dust by-product at least to prevent the environmental pollution.

Balcar et al teach that a sodium silicate (claimed binder) (See column 7, lines 23-27) or a **similar** substance (claimed binder) (See column 5, lines 51-52) in a *liquid* form (See column 6, lines 4-7; column 8, lines 24-26) can be used as a binder for granulating a glass dust (See column 8, line 26) for the use in roofing granules (See column 6, line 16).

One of ordinary skill in the art would have reasonable expectation of success in using a method of Balcar et al to recycle stone dust by-product produced after crushing and screening **mineral** aggregates in each of Joedicke, Skadulis and McMahon because Balcar et al teach that a sodium silicate or a **similar** substance can be used as a binder for granulating a glass (**mineral**) dust for the use in roofing granules.

It should be further noted that in contrast to Applicants argument, Ine et al is analogous art since Ine et al teach a solution of essentially the same problem addressed by appellants, i.e., recycling a stone fine powder (claimed dust) after crushing and screening to produce granules of desired grain size (See Applicants' specification, page 5, lines 25-32) by mixing the dust with a binder (See Ine et al, Abstract, P8, 12-18 and Applicants' specification, page 13, lines 1-5). It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

Claims 9-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al., further in view of Balcar et al, and further in view of U.S. Patent 6,306,795 ("Ryan et al.").

(A) Applicants argue that as previously noted above, Ine et al. is not properly combinable with Joedicke/Skadulis/McMahon because they relate to non-analogous arts. Similarly, Balcar et al.'s binder is not intended for a purpose similar to that of the Joedicke/Skadulis/McMahon binder. Ryan et al. disclose stable highly active supported copper based catalysts, an art that is not analogous to the roofing granule art. Ryan et al. is interested in retaining the copper in the carrier, while the present invention is directed to algae-resistant roofing granules, which permit the metal species to slowly leach out of the roofing granule.

As to rejection over Joedicke/Skadulis/McMahon in view of Ine et al., further in view of Balcar et al, the Examiner respectfully disagrees with this argument for the reasons discussed above.

As to Ryan et al, the cited prior art fails to teach that algaecide *cuprous oxide* is incorporated into base particles by dissolving *cuprous oxide* algaecide-forming compound in a fluid to form a solution, drawing the solution into the pores in the base particles by capillary action to form solution-laden particles, subsequently treating the solution-laden particles to convert the algaecide-forming compound to *cuprous oxide* inorganic algaecide (Claim 9, 11, 12, 44); the algaecide-forming compound is a soluble *copper* salt (Claim 10).

Ryan et al is a *secondary* reference which is relied upon to show that *cuprous oxide* can be incorporated into a porous carrier material such as silica/alumina (See column 10, lines 27-28) by impregnating the porous carrier material with an aqueous solution of copper salts such as copper nitrate using e.g. well known the pore-volume impregnation (PVI) method (See column 11, lines 4-7, 22-42, 50-67), air drying and calcining the impregnated porous carrier material at 200 $^{\circ}\text{C}$ -540 $^{\circ}\text{C}$ to convert the copper salt to cupric oxide, *cuprous oxide*, or a mixture of the two (See column 12, lines 1-22).

One of ordinary skill in the art would have reasonable expectation of success in using a method of Ryan et al to incorporate *cuprous oxide* into base particles of the cited prior art because the base particles of the cited prior art are also minerals.

(B) In response to applicant's argument that Ryan et al is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Ryan et al reasonably pertinent to the particular problem with which the applicant was concerned such as incorporating *cuprous oxide* into pores of *mineral* base particles. Therefore, Ryan et al is analogous art.

(C) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

(D) In response to applicant's argument that Ryan et al is interested in retaining the copper in the carrier, while the present invention is directed to algae-resistant roofing granules, the present invention is also interested in retaining the copper in the carrier, so that to leach out copper slowly for a long period of time.

(E) Applicants argue that the cited references do not make out a *prima facie* case of obviousness, but are simply a hindsight attempt to reconstruct applicants' presently claimed invention using a large number of references (4).

According to MPEP, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation in the references themselves to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Since all three basic criteria are met, as was discussed above, the cited references make out a *prima facie* case of obviousness.

(F) In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

Claims 46-50 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Joedicke/Skadulis/McMahon in view of Ine et al., further in view of Balcar et al., and further in view of U.S. Patent 4,735,975 ("Iwata et al.").

Applicants contend that Iwata et al. relates to a non-analogous art and is not properly combinable with the other references cited. Iwata et al. relates to the preparation of a friction material for automotive brake pads formed from a fibrous material, a granular material and a thermoset resin.

The Examiner respectfully disagrees with this argument Iwata et al is a secondary reference which is relied upon to show that distribution and porosity of granulated powder material (See column 2, lines 43-43) may be controlled by particle size distribution of the granular material, shape of the granules and/or the amount of the binder resin (See column 3, lines 12-18). It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Iwata et al et al is reasonably pertinent to the particular problem with which the applicant was concerned such as controlling porosity by selection of the shape of the stone dust (Claims 46, 48)

Art Unit: 1762

or by selection of the particle size distribution (Claims 47, 49) or by adjusting the ratio of stone dust and aluminosilicate. Therefore, Iwata et al is analogous art.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Thursday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1762

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy
Primary Examiner
Art Unit 1762

ELENA TSOY
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E.TSOY

July 16, 2007